ORIGINAL ARTICLE

Outcome of Management of Patients With Trauma to Limbs Presenting to General Surgeon in Allama Iqbal Memorial Teaching Hospital, Sialkot

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ABSTRACT

Aim: To study the nature of injuries and outcome of management of the patients with trauma to limbs presenting to general surgeon in Emergency department at Allama Iqbal Memorial Teaching Hospital, Sialkot.
Study Design: Prospective study.
Place & duration of study: Department of General Surgery, Khawaja Muhammad Safdar Medical College, Sialkot from January 2015 to December 2017.
Methods: All patients serially presented in the surgery Department of Allama Iqbal Memorial hospital fulfilling the inclusion criteria were registered. The patients were classed in two groups: Group I patients having injuries to upper limb and Group II injuries to Lower limbs. All injuries and surgical procedures were recorded and complications were looked for. Minimum of three months of follow up was must for inclusion in the study.
Results: There were 321 patients who presented with trauma to limbs in this study, 201 were male and 120 females (1.7:1). In group I, brachial artery injuries were 7(3%), axillary artery injuries 2(0.8%), radial nerve injury 5(2.1%) ulnar nerve injury 7(3%), median nerve injury 3(1.2%), fracture of clavicle 39(16.8%), fracture of humerus 19(8.2%), fracture of radius 28(12.1%), fracture of ulna 9(3.8%), fracture of wrist and hand bones 30(12.9%), injury to muscle and tendons 76(32.9%) and disruption of joints includes 6(2.5%) injuries. In group II, popliteal artery injuries were 21(7%), femoral artery injuries 12 (4.00%), fracture of femur 32(10.8%), fracture of tibia 49(16.6%), fracture of fibula 17(5.7%), fracture of ankle and foot 51(17.3%), injuries to muscle and tendons 108(36.7%) and disruption of joints 4(1.3%).
Conclusion: Trauma to limbs is a significant part of the workload in emergency settings and adequate training of general surgeons is mandatory in this field.
Keywords: Penetrating trauma, splintage, vascular repair, exploration, Amputation, RTA

INTRODUCTION

Trauma is an important public health issue in the world because it is related with high death rate and increase incidence of complications in both developed and developing countries. It has been documented as the leading cause for hospital admissions, permanent disabilities and death[1,2].

A large number of complicating injuries occur as a result of permeating energy being transferred to the tissues due to penetrating injuries to limbs. Mostly, high-energy injuries occur in the military setting, can also occur in the civilian setting and especially after terror attacks. In armed forces, body armor are used that protects from severe injuries but bone, vessels, nerves and soft tissues injuries are common. In the civilian sector, incidence of penetrating injury is 5-15% as recorded in Sweden, USA and Germany[3,4]. Although in some other countries incidence of injuries is higher. Gunshot injuries are common in countries where weapons are used oftenly but stab wounds are more common in Europe. Vascular trauma in 5% of cases is caused by gunshot injuries[5].

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If immediately emergency treatment is given by a competent team to the patients the prognosis of penetrating arterial injuries is good. Within the last two decades from our institution many articles on this subject were published. We have changed our protocol for management ,as in the last few years poplitial injuries were dealt by trauma surgeons but now they are done under the supervision of vascular surgeon. The objective of this study was to evaluate the result of these amendments in our protocol of management to the outcome of patient by assessing the rate of exploration and rate of amputation[6,7].

Morbidity in the postoperative period differs or not is a questionable issue[8,9,10]. No work has been done on this topic in this region so we planned this study, we collected the data of our patients managed at emergency department of Allama Iqbal memorial teaching hospital affiliated with Khawaja Muhammad Safdar Medical College, Sialkot

PATIENTS AND METHODS

All patients serially presented in the surgery Department of Allama Iqbal Memorial hospital fulfilling the inclusion criteria were registered. The records of all patients were recorded and data were collected prospectively. The demographic features, type of the trauma, clinical and radiological findings, associated organ injuries, management of the pathologies, surgical interventions, morbidity, and mortality were analyzed. Patients presenting with hypotension, massive blood loss, or disabling dyspnoea were evaluated immediately on admission. The patients were classed in

two groups: Group I patients having penetrating trauma to upper limb Group II Lower limb injuries. Minimum of three months of follow up was must for inclusion in the study. Trauma to head and neck were excluded as these were managed by the respective departments. The patients fulfilling inclusion criteria were managed conservatively and surgically were admitted, variables including definite vascular injuries, operative procedures postoperative morbidity and mortality was recorded. Data was entered and analysis done by SPSS v 22.

RESULTS

The basic demographic data of our patients is shown in Table I. Compartment syndrome was diagnosed only clinically and fasciotomies were done on the base of clinical decision. The differential injuries encountered during these surgeries are shown in the Table II. Nerve injury was repaired at the time of the arterial repair only if the patient was haemodynamically stable and the repair of the nerve was easy.

The leading cause of the trauma was violence (41%) followed by traffic accidents,

Table I: General Data

Total no of patients in Study	321	100%
Age	12- 47 years	Mean age 37± 8 years
Male: female	201: 120	1.7:1
Injuries caused by Firearm	79	24.6%
Road traffic accidents	166	51.7%
Physical fighting/ Violence with sharp weapon/stabs	46	14.3%
Falls from height	30	9.3%
Group I- upper limb	142	44.2%
Group II- lower limb	179	55.7%

Table II Nature of injuries

Group I - Upper limb Injuries 231 (100%)		
Brachial artery injuries	7	3%
Axillary artery injury	2	0.8%
Radial Nerve injury	5	2.1%
Ulnar Nerve injury	7	3%
Median Nerve injury	3	1.2%
Fractures of clavicle	39	16.8%
Fracture of Humerus	10	4.3%
Fractures of Radius	28	12.1%
Fractures of Ulna	9	3.8%
Joint dislocations	9	3.8%
Fractures of wrist and hand bones	30	12.9%
Injuries to Muscles and tendons	76	32.9%
Disruption of joints	6	2.5%
Group II- lower limb injuries **294 (100%)**		
Popliteal artery injuries	21	7.1%
Femoral artery injuries	12	4.0%
Fractures of Femur	32	10.8%
Joint dislocations	1	0.29%
Fractures of Tibia	48	16.6%
Fractures of Fibula	17	5.7%
Fractures of Ankle and Foot	51	17.3%
Injuries to Muscles and tendons	108	36.7%
Disruption of joints	4	1.3%

Table III: Procedures done

Procedure	**Upper limb 231 (100%)**	**Lower limb- 294 (100%)**
External fixators application	6(2.5)%	40(13.6)%
POP casts/ Splintage	63(27)%	101(34.3)%
Open Reduction and internal fixation	15(6.4)%	134(45.5)%
Closed Reduction of joints	9(3.8)%	1(0.3)%
Repair of arteries	4(1.7)%	24(8.1)%
Ligation of Arteries	5(2.1)%	9(3)%
Nerve repair	9(3.8)%	-
Fasciotomies	11(4.7)%	20(6.8)%

Table IV: Morbidity and mortality data

	Group I- 142 (100%)	**Group II 79 (100%)**
Wound infections	11(7.7)%	39(21.7)%
Re- exploration	3(2.1)%	9(5)%
Limb ischemia	0	7(3.9)%
Malnuion	2(1.4)%	6(3.3)%
Nonunion	3(2.1)%	2(1.1)%
Joint stiffness	6(4.2)%	7(3.9)%
Minor Amputations	6(4.2)%	15(8.3)%
Major Amputations	0	7(3.9)%
Mortality	1(0.7)%	4(2.2)%

DISCUSSION

In our study male to female ratio is 1.7:1 while a study conducted by Nair R et al[11] male to female ratio is 11:1. A study by Bijay et al[12] shows that 70-80% vascular injuries were caused by bullets and gun and 25% by RTA in our study 24.6% injuries were by firearm, 51.7% by RTA, 14.3% by stab wound, 9.3% by fall from height.

The mean age is 37±8 while mean age in a study done by Murad et al[13] had mean age of 28.5 years in patients having vascular injury. In our study injury to upper limb is 44.2% and that to lower limb is 55.7%

In a research done by Bijay et al[12] 50-60% cases femoral and popliteal artery were injured. in 30% cases brachial artery was injured. In our research 16% brachial artery, 18% axillary artery, 50%popliteal artery 7.1% femoral artery were injured

In our research 85% injuries were associated with fracture to upper and lower limbs in a research done by Rozycki et al[14] 95% cases of vascular trauma was associated with fractures and dislocation. In a research done by Bijay et al[12] lower limb fractures were greater than upper limb fractures but in our research upper limb fractures were greater than lower limb fractures.

In our research 15% cases developed wound infection 3% needed reexploration 2% developed malunion, 1% had nonunion, 4% developed joint stiffness, 6% needed minor amputation while 2% underwent major amputation 2% had limb ischemia and 1% was mortality while a research done by Peck et al[15] 3.7% developed wound infection, 3% had acute anastomosis disruption and 4.5% developed graft thrombosis.

CONCLUSION

Trauma to limbs is a major bulk of workload in emergency settings and adequate training of general surgeons is mandatory in this field. The timely treatment in such patients have appreciable outcome; but it mainly depends upon prehospital management and delay.

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